

Appendix A – Detailed Description of Upland Thinning Actions

[Objectives and actions to achieve Goals 1 and 3 of the LSR Restoration Plan are addressed in Appendix A of the ROD for the Upper Siuslaw LSR Restoration Plan - Watershed Restoration Actions].

GOAL 2: *Foster the development of late-successional forest structure and composition in plantations and young forests within LSR 267.*

OBJECTIVE: Reduce tree density and increase variability of tree spacing in 90% (100% of stands; 90% of acres) of the 1-20 year age class that has not been pre-commercially thinned, so that tree densities range from 75-150 TPA within 10 years.

ACTION: Thin approximately 1/3 of stands aged 11 to 20 years to a stand average of 75-100 Douglas-fir trees per acre.

ACTION: Thin approximately 1/3 of stands aged 11 to 20 years to a stand average of 100-120 Douglas-fir trees per acre.

ACTION: Thin approximately 1/3 of stands aged 11 to 20 years to a stand average of 120-150 Douglas-fir trees per acre.

GUIDELINES:

- Select only Douglas-fir for cutting.
- Select the largest, healthiest trees for retention, regardless of spacing.
- Leave most or all cut trees in the stand.
- Generally apply the lower density prescriptions to the older stands within the age class.

MITIGATION MEASURES:

- Along areas (such as roadsides and adjacent clearcuts) with noxious weed problems, do not thin along edge (approximately 10' - 25') of stands to restrict spread of noxious weeds. Some tree cutting will be necessary to provide operational access.

OBJECTIVE: Reduce tree density and increase variability of tree spacing in 90% (100% of stands; 90% of acres) of the 1-20 year age class that has been pre-commercially thinned, so that tree densities range from 40-60 TPA within 10 years.

ACTION: Thin stands in uplands (i.e., >100' from streams) to a treated stand average of 40-60 Douglas-fir trees per acre, with variable spacing.

GUIDELINES:

- Select only Douglas-fir for cutting.
- Select trees for retention based on random or highly variable spacing. Use thinning prescriptions that cut trees <20" dbh approximately in proportion to their abundance amongst diameter classes, or preferentially cut trees in the most abundant diameter classes in the stand.

- Do not select trees >20" dbh for cutting. Leave in the stand any trees >20" dbh felled for safety or operational reasons.
- Leave in the stand any cut trees >16" dbh.
- Remove cut trees <16" dbh as necessary to reduce risk of fire or insect infestation. Some removal will generally be necessary in stands that have been pre-commercially thinned more than 8 years ago.
- Target stand densities should be reached after completion of coarse woody debris and snag creation done under objectives below.
- Generally apply thinning more than 8 years after pre-commercial thinning.

MITIGATION MEASURES:

- Along areas (such as roadsides and adjacent clearcuts) with noxious weed problems, do not thin along edge (approximately 10' - 25') of stands to restrict spread of noxious weeds. Some tree cutting will be necessary to provide operational access.

OBJECTIVE: Reduce tree density and increase variability of tree spacing in 75% (100% of stands; 75% of acres) of the 21-30-year age class, so that tree densities range from 40-110 TPA within 10 years.

ACTION: Among stands aged 21 to 30 years that were pre-commercially thinned, thin approximately 1/3 of stands in uplands (i.e., >100' from streams) to a treated stand average of 40-60 Douglas-fir trees per acre, with variable spacing.

ACTION: Among stands aged 21 to 30 years that were pre-commercially thinned, thin approximately 1/3 of stands in uplands (i.e., >100' from streams) to a treated stand average of 60-80 Douglas-fir trees per acre, with variable spacing.

ACTION: Among stands aged 21 to 30 years that were pre-commercially thinned, thin approximately 1/3 of stands in uplands (i.e., >100' from streams) to a treated stand average of 80-110 Douglas-fir trees per acre, with variable spacing.

GUIDELINES:

- Select only Douglas-fir for cutting.
- Select trees for retention based on random or highly variable spacing. Use thinning prescriptions that cut trees <20" dbh approximately in proportion to their abundance amongst diameter classes, or preferentially cut trees in the most abundant diameter classes in the stand.
- Do not select trees >20" dbh for cutting. Leave in the stand any trees >20" dbh felled for safety or operational reasons.
- Leave in the stand any cut trees >16" dbh.
- Remove cut trees <16" dbh as necessary to reduce risk of fire or insect infestation. Some removal will generally be necessary in stands that have been pre-commercially thinned more than 8 years ago.
- Target stand densities should be reached after completion of coarse woody debris and snag creation done under objectives below.

MITIGATION MEASURES:

- Along areas (such as roadsides and adjacent clearcuts) with noxious weed problems, do not thin along edge (approximately 10' - 25') of stands to restrict spread of noxious weeds. Some tree cutting will be necessary to provide operational access.

ACTION: Among stands aged 21 to 30 years that were not pre-commercially thinned, thin

75% of uplands (i.e., >100' from streams) to a treated stand average of 60-110 Douglas-fir trees per acre.

GUIDELINES:

- Select only Douglas-fir for cutting.
- Thin from below: select the largest, most vigorous trees for retention without regard for tree spacing. A diameter-limit prescription of 10" dbh (i.e., all Douglas-fir <10" dbh would be cut) might be typical.
- Leave in the stand any cut trees >16" dbh, such as those felled for safety or operational reasons (trees >12" dbh will rarely be selected for cutting).
- Remove cut trees <16" dbh as necessary to reduce risk of fire or insect infestation.
- Densities may be left higher than 110 trees per acre in areas if needed to maintain stand stability.
- Target stand densities should be reached after completion of coarse woody debris and snag creation done under objectives below.

MITIGATION MEASURES:

- Along areas (such as roadsides and adjacent clearcuts) with noxious weed problems, do not thin along edge (approximately 10' - 25') of stands to restrict spread of noxious weeds. Some tree cutting will be necessary to provide operational access.

OBJECTIVE: Reduce tree density and increase variability of tree spacing in 50% (100% of stands; 50% of acres) of the 31-50-year age class, so that tree densities range from 40-110 TPA within 10 years.

ACTION: Among stands aged 31 to 50 years, thin approximately 1/4 of stands in uplands (i.e., >100' from streams) to a treated stand average of 40-60 Douglas-fir trees per acre, with variable spacing.

ACTION: Among stands aged 31 to 50 years, thin approximately 1/4 of stands in uplands (i.e., >100' from streams) to a treated stand average of 60-80 Douglas-fir trees per acre, with variable spacing.

ACTION: Among stands aged 31 to 50 years, thin approximately 1/4 of stands in uplands (i.e., >100' from streams) to a treated stand average of 80-110 Douglas-fir trees per acre, with variable spacing.

GUIDELINES:

- Select only Douglas-fir for cutting.
- Select trees for retention based on random or highly variable spacing. Use thinning prescriptions that cut trees <20" dbh approximately in proportion to their abundance amongst diameter classes, or preferentially cut trees in the most abundant diameter classes in the stand.
- Do not select trees >20" dbh for cutting in the thinning prescription (some trees >20" dbh will be cut to meet coarse woody debris objectives). Do not harvest any trees >20" dbh felled for safety or operational reasons (though trees may be moved to provide coarse woody debris to other stands or streams).
- Remove cut trees <20" dbh as necessary to reduce risk of fire or insect infestation. Some removal will generally be necessary.
- Retain existing snags and coarse woody debris, except for safety and operational reasons.
- Retain in the stand any snags felled for safety or operational reasons.
- Target stand densities should be reached after completion of coarse woody debris and

snag creation done under objectives below.

MITIGATION MEASURES:

- Along areas (such as roadsides and adjacent clearcuts) with noxious weed problems, do not thin along edge (approximately 10' - 25') of stands to restrict spread of noxious weeds. Some tree cutting will be necessary to provide operational access.
- In existing dispersal habitat within current owl home ranges, use thinning prescriptions that would retain at least 40 percent canopy closure.

ACTION: Among stands aged 31 to 50 years, thin approximately 1/4 of stands in uplands (i.e., >100' from streams) to a treated stand average of 60-110 Douglas-fir trees per acre without regard to spacing.

GUIDELINES:

- Select only Douglas-fir for cutting.
- Thin from below: select the largest, most vigorous trees for retention without regard for tree spacing.
- Do not select trees >20" dbh for cutting in the thinning prescription (some trees >20" dbh will be cut to meet coarse woody debris objectives). Do not harvest any trees >20" dbh felled for safety or operational reasons (though trees may be moved to provide coarse woody debris to other stands or streams).
- Leave in the stand any cut trees >16" dbh (trees >12" dbh will rarely be selected for cutting).
- Remove cut trees <16" dbh as necessary to reduce risk of fire or insect infestation.
- This prescription will generally be applied to stands in which the smaller diameter trees are not expected to respond to increased growing space (e.g., high-density stands that were not pre-commercially thinned).
- Target stand densities should be reached after completion of coarse woody debris and snag creation done under objectives below.

MITIGATION MEASURES:

- Along areas (such as roadsides and adjacent clearcuts) with noxious weed problems, do not thin along edge (approximately 10' - 25') of stands to restrict spread of noxious weeds. Some tree cutting will be necessary to provide operational access.

OBJECTIVE: Reduce tree density and increase variability of tree spacing in 25% (50% of stands; 50% of acres) of the 51-60-year age class, so that tree densities range from 40-110 TPA within 10 years.

ACTION: Among stands aged 51 to 60 years, thin approximately 1/2 of stands in uplands (i.e., >100' from streams) to a treated stand average of 40-60 Douglas-fir trees per acre, with variable spacing.

ACTION: Among stands aged 51 to 60 years, thin approximately 1/2 of stands in uplands (i.e., >100' from streams) to a treated stand average of 60-80 Douglas-fir trees per acre, with variable spacing.

GUIDELINES:

- Select only Douglas-fir for cutting.
- Select trees for retention based on a combination of thinning from below (i.e., cutting smaller diameter trees) and proportional thinning amongst the larger diameter trees (cutting trees in approximate proportion to their abundance). This prescription will be

expected to (1) cut most trees that are not expected to respond to increased growing space and (2) cut in a random or highly variable pattern some of those trees that are expected to respond to increased growing space (e.g., trees with larger diameter, lower height:diameter ratio, greater percentage of live crown, etc.).

- Do not select trees >20" dbh for cutting in the thinning prescription (some trees >20" dbh will be cut to meet coarse woody debris objectives). Do not harvest any trees >20" dbh felled for safety or operational reasons (though trees may be moved to provide coarse woody debris to other stands or streams).
- Remove cut trees <20" dbh as necessary to reduce risk of fire or insect infestation. Some removal will generally be necessary.
- Retain existing snags and coarse woody debris, except for safety or operational reasons.
- Retain in the stand any snags felled for safety or operational reasons.
- Target stand densities should be reached after completion of coarse woody debris and snag creation done under objectives below.
- Generally avoid thinning in stands that have large residual trees, large snags, and a wide range of tree heights, because such stands may provide roosting and foraging habitat for northern spotted owls. Thinning should generally be done only in stands that exhibit a homogeneous stand structure.

MITIGATION MEASURES:

- Along areas (such as roadsides and adjacent clearcuts) with noxious weed problems, do not thin along edge (approximately 10' - 25') of stands to restrict spread of noxious weeds. Some tree cutting will be necessary to provide operational access.
- Evaluate stands ≥51 years old with older remnant trees for potential marbled murrelet habitat. Survey potential habitat or leave untreated.
- In existing dispersal habitat within current owl home ranges, use thinning prescriptions that would retain at least 40 percent canopy closure.
- Do not thin within current owl home ranges that currently have less than 40% suitable habitat.

ACTION: Renovate and improve existing roads and construct new spur roads as needed to access areas selected for thinning.

GUIDELINES:

- Minimize length of new spur road construction. New spur roads will generally be less than 200' in length.
- Minimize cut and fill in spur road construction. Approximate pre-construction land contour in decommissioning.

MITIGATION MEASURES:

- Do not construct new permanent spur roads.
- Do not construct new spur roads within Riparian Reserves, and do not construct new stream crossings.
- In constructing new spur roads, do not cut conifers ≥32" dbh.
- Limit temporary spur road use to a single logging season and decommission spur roads at the end of the logging season (i.e., before the beginning of winter rains).
- Do not construct any new spur roads in stands >80 years old.
- Subsoil temporary roads upon completion of project as needed to reduce soil compaction.
- Block decommissioned roads to restrict vehicular access.

OBJECTIVE: In stands treated under the above objectives, develop densities of shade-tolerant conifers to ensure that by age 81, they contain densities similar to those found in mature natural stands (26-90 TPA >2" dbh).

ACTION: Within stands that are thinned to below 110 TPA at ages 21-30 and lack sufficient shade-tolerant conifer trees or seedlings to meet the objective, plant seedlings of shade-tolerant conifers (western hemlock, western red-cedar, grand fir, incense-cedar and/or Pacific yew) at densities of 26-200 trees per acre.

ACTION: Within stands that are thinned to below 80 TPA at ages 31-60 and lack sufficient shade-tolerant conifer trees or seedlings to meet the objective, plant seedlings of shade-tolerant conifers (western hemlock, western red-cedar, grand fir, incense-cedar and/or Pacific yew) at densities of 26-200 trees per acre.

GUIDELINES:

- Give preference in planting to areas with the greatest likelihood of seedling establishment and growth, considering factors such as post-thinning overstory density and shrub competition.
- Planting may be concentrated in distribution in response to site-specific conditions and need not be evenly distributed across the stand. Planting densities should generally be met at the scale of 20 acres (e.g., 520-4,000 trees/20 acres).

OBJECTIVE: In stands treated under the above objectives, develop quantities of snags and coarse woody debris to ensure that by age 81, they contain amounts consistent with Alternative #2 in the LSR Assessment (1102-3794 cu. ft./acre).

ACTION: In thinned stands in which some cut trees are removed and coarse woody debris needs are not being met, leave sufficient felled trees as coarse woody debris to meet stand average coarse woody debris levels of at least 551 cu.ft./acre.

GUIDELINES:

- Coarse woody debris levels should be met at the approximate time of thinning operations.
- Coarse woody debris may be concentrated in distribution and need not be evenly distributed across the stand. Coarse woody debris levels should generally be met at the scale of 20 acres (e.g., 11,020 cu.ft./20 acres). Individual coarse woody debris patches (i.e., areas in which all Douglas-fir trees are cut) should generally be limited to less than 1/4 acre in size.
- At least half of the volume of coarse woody debris target (i.e., 276 cu.ft./acre) should be from trees of diameters greater than the pre-treatment stand average diameter.

ACTION: In thinned stands in which some cut trees are removed and snag needs are not being met, create sufficient snags to meet stand average snag levels of at least 551 cu.ft./acre. Snags may be created by a variety of methods, including girdling, topping, and/or fungal inoculation.

GUIDELINES:

- Snag creation may be done at the time of thinning or delayed to allow time to assess natural tree mortality levels following thinning. Regardless, snag levels should be met within 5 years of the thinning operations, or within 10 years for stands thinned at ages

21-30 years.

- Snags may be concentrated in distribution and need not be evenly distributed across the stand. Snag levels should generally be met at the scale of 20 acres (e.g., 11,020 cu.ft./20 acres). Individual snag patches (i.e., areas in which all Douglas-fir trees are killed) should generally be limited to less than 1/4 acre in size.
- At least half of the trees left for snags should have diameters greater than the pre-treatment stand average diameter.